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TITLE: Bisphosphonate-Based Contrast Agents for Radiological  
Imaging of Microcalcifications

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## INTRODUCTION

The overall objective of this work is to develop biochemical markers for calcium that serve as contrast agents in advanced imaging procedures. We will focus on alendronate derivatives as targeting compounds for imaging soft tissue calcium. Specifically we intend to develop a molybdenum-bisphosphonate complex for use in dual energy digital subtraction mammography and a bisphosphonate-gadolinium chelate for use in MR breast imaging. We will perform associated initial testing and small animal imaging experiments. Because of its unique ability to reveal microcalcifications, mammography can detect small carcinomas at an early stage. A MR contrast agent that targets calcium deposited in soft tissue could potentially have a very high impact in the field of diagnostic imaging in breast cancer. Similarly, a potent and specific marker for calcium could greatly enhance the diagnostic potential of dual-energy digital subtraction mammographic breast imaging.

## BODY

During the past year, the principal investigator has undergone significant changes in his job responsibilities and has become increasingly involved in medical physics activities in the Division of Nuclear Medicine. Consequently, there was a significant delay in starting this project. A no-cost extension of the project was requested and granted in August 2004. The focus for the coming year will be on completing the original project objectives.

## KEY RESEARCH ACCOMPLISHMENTS

### REPORTABLE OUTCOMES

None to date

### CONCLUSIONS

Significant delays in starting this project have occurred. We now expect to complete the project, as originally proposed, during the extension year.